

Title: Create-a-Carnival

Brief Overview:

This unit will have students planning a school carnival to be held at the end of the school year. The development of the carnival will involve an art activity, setting up the dining area, establishing game rules, and assigning job responsibilities. The students will independently write an informative letter to the principal regarding one of the events that has been planned for the carnival. All activities will integrate patterns, writing, and "real-life" situations.

Links to Standards:

- **Mathematics as Problem Solving**

Students will use information to identify a problem(s), organize and interpret the data, solve the problem, and check the solution. They will be encouraged to demonstrate their abilities to solve problems cooperatively with open-ended answers.

- **Mathematics as Communication**

Students will be given a variety of ways to communicate mathematically. They will demonstrate an ability to justify and explain patterning. After reading, listening to, and discussing the possible strategies, the students will incorporate writing as another means of communication.

- **Mathematics as Reasoning**

Students will be given opportunities to explain how they arrived at their conclusions using manipulatives, pictorials, and oral and written language.

- **Mathematical Connections**

Students will demonstrate their ability to connect patterning with other strands in mathematics, content areas, and the world around them.

- **Number Sense and Numeration**

Students will demonstrate their ability to describe and apply number relationships using concrete and abstract materials. They will choose appropriate operations and describe effects of operations on numbers.

- **Patterns and Relationships**

Students will demonstrate their ability to recognize numeric and geometric relationships. They will organize information and find regularity in the data.

Grade/Level:

Grades 2-5

Duration/Length:

This unit will take seven to ten one hour lessons.

Prerequisite Knowledge:

Students should have working knowledge of the following skills :

- ☐ Copying patterns
- ☐ Continuing patterns
- ☐ Describing patterns
- ☐ Building patterns
- ☐ Moving from concrete to abstract patterning
- Problem solving strategies

Objectives:

Students will be able to:

- ☐ work cooperatively in groups.
- ☐ organize data.
- ☐ evaluate situations and give appropriate support for their answers.
- ☐ copy, continue, describe, and build upon patterns.
- ☐ see patterns and organize information.
- ☐ communicate through their writing.

Materials/Resources/Printed Materials:

- Resource Sheets 1-7
- "Math Talk"/Problem Solving Strategies Sheet
- Highlight Markers (or yellow crayons)
- Colored pencils/crayons
- Manipulatives (pattern blocks, unifix cubes, color tiles, etc.)
- Calculators
- Overhead projector and pens
- Sentence Strips
- Various shapes of pasta (able to be put on a string)
- String and glue
- Construction paper

Development/Procedures:

Task 1: The students will assign job duties per classmate for setting up the carnival.

- ☐ Generate a discussion of a carnival and its set-up.
(e.g., what you see, hear, do, etc.). Utilize a KWLS chart to organize ideas.
- ☐ Read a book about a carnival to the students.
- ☐ Read the prompt.
- ☐ Define terms as necessary (carnival, booth, etc.) to develop a general understanding of the components of a carnival.
- ☐ Discuss how to make a job run smoothly. Direct student responses toward fairness, teamwork, responsibility, etc.
- ☐ After rereading the prompt, use the overhead to highlight key words. Have the students highlight their copies.
- ☐ Have manipulatives available at a central location.
- ☐ After students complete resource sheet 1, have them share their results with a partner. Have partner respond constructively.

Task 2: The students will determine the total number of tries earned for dunking the principal.

- ☐ Read the prompt.
- ☐ Discuss with the students the expectations for individual work.
- ☐ Assign students to complete Task 2.
- ☐ Discuss group responses.

Task 3: The students will work cooperatively to create patterns to be used during the carnival.

Activity 1: Carnival Walkers

- ☐ Students should be seated in groups of four or five.
- ☐ Set the scene of a carnival. Have students imagine that they are the roaming jugglers, clowns, and mimes. They will be circulating the carnival as entertainers.
- ☐ Give students oral directions to make patterns using body movements. (e.g. snap, clap, clap, smile; snap, clap, clap, smile, ...)
- ☐ Demonstrate how to find the ABC rule for the body movement pattern. See chart below.

SNAP	CLAP	CLAP	SMILE	SNAP	CLAP	CLAP	SMILE
A	B	B	C	A	B	B	C

- Assign one type of entertainer to each group. Have students create their own body movement patterns with a repetitive pattern.
- In their journals, students will write the ABC pattern for their movements.
- Use unifix cubes or lots-of-links to display the pattern with concrete materials.

Activity 2: Designing Patterned Necklaces

- Distribute a variety of pasta to each student. Allow time for experimentation.
- Students will create their own pattern using the pasta.
- On construction paper, students use a crayon to draw a line to represent the string of a necklace.
- Next, students will glue the pasta onto the line in the pattern they have designed.
- In their journals, students will write the ABC rule for their pattern. They should include a labeled diagram of their necklace.

Extension:

- You may want to refer to the book Pictograms, which has pictures of pasta.
- This activity may be placed in students' portfolios.

Activity 3: Creating Necklaces for the Carnival

- Explain to students that they will be using patterns to make necklaces to be sold at the carnival.
- Give out a variety of pasta shapes to groups. Allow some exploration time (about 5 minutes).
- Distribute the coordinating clues from resource sheets four or five to each group; making sure that each student receives only one clue.
- Allow groups time to work through their problem by using the clues and the manipulatives. Following the directions given, the students will complete the problem with the pasta on their desks first and then check their work.
- Students draw their pattern in their journal. They then determine the ABC pattern under the drawing.
- Students create their necklaces with string by using the pattern they were given.
- To conclude, have groups present their necklaces. While explaining their pattern, students will identify the core and show the ABC rule.

Extension:

- You may want to have some groups design a pattern and devise their own clues using resource sheet 6.
- If desired, pasta may be painted, dyed, or decorated.

Task 4: The students will work cooperatively to set up cotton candy trays using patterns.

- Generate a discussion about the variety of colors in which cotton candy can be found.
- Using sentence strips as trays, have partners create and illustrate patterns using several different colored pencils, crayons or markers to represent the cotton candy.
- In the students' journals, they will identify and explain their pattern, as well as justify it, by determining the color of the 40th term. Encourage students to use one of the problem solving strategies.
- Explain to students that their writing will be scored with a rubric. Discuss the rubric with the students in order to set high expectations.

Task 5: The students will write an informative letter to the principal.

- Read the prompt.
- Discuss with the students the expectations for individual work.
- Assign students to complete Task 6.
- Discuss group responses.

Performance Assessment:

One rubric has been included for ALL tasks. You may choose to make more specific rubrics for each task, have the students develop their own, or simply score them by another means.

Extension/Follow Up:

- Students can actually help plan the end of the year carnival.
- Write an expanded sentence about the carnival experience that grows in size.

At
At the
At the carnival
At the carnival I
At the carnival I dunked
At the carnival I dunked the
At the carnival I dunked the principal.

- After students write the expanded sentence, have them create a growing pattern.

Key : O = Cotton Candy

* = Popcorn

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      O
    O*O
  O**O
O***O
O****O
O*****O

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- Using a recipe for cotton candy or any other carnival food, increase the number of servings needed for a larger number of people.

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VIGNETTE

Dear Students,

Congratulations! Your class has been selected to assist the PTA in planning the annual school carnival to be held in June.

You will be in charge of several events: the dunk tank, noodle necklace artwork, the dining area, and cotton candy trays. You are also responsible for assigning job duties to fellow classmates.

I know that you will help to make this year's carnival a huge success! Good Luck!

Sincerely,

Your Principal

Resource Sheet 1

Task 1: Carnival Companions

PROMPT :

The PTA has selected your class to assist in the development and planning of this year's annual carnival. Your class of 32 must be grouped equally to run each booth.

How can you distribute the jobs among your class in groups of two, three, and four?

SHOW YOUR WORK USING A GRAPHIC ORGANIZER:

EXPLAIN YOUR ANSWER AND JUSTIFY YOUR THINKING:

Resource Sheet 2

Task 1: Carnival Companions

KWLS Chart

What I KNOW :	What I WANT to Know:	What I LEARNED :	What I STILL Want to Know:

Resource Sheet 3

Task 2: Dunk Tank

PROMPT :

Throughout the school year, students have been handing in reading logs containing a list of 15 books they have read. For each completed log, students receive (at the carnival) one ticket which allows them three tries at dunking the principal.

Katie Bookworm is the top reader of the school. She has handed in twelve reading logs.

How many books has she read?

How many tickets will she receive?

How many tries has she earned?

SHOW YOUR WORK:

JUSTIFY YOUR ANSWER:

Resource Sheet 4

Task 3: Noodle Necklace Artwork

<p>Use 5 pieces of pasta to make a pattern. All holes must be touching.</p> <p>3A</p>	<p>Use 1 ribbed and 1 smooth tube. They do not touch each other.</p> <p>3A</p>
<p>The 2 elbows do not touch the wheel.</p> <p>3A</p>	<p>The elbows will touch only smooth pasta.</p> <p>3A</p>

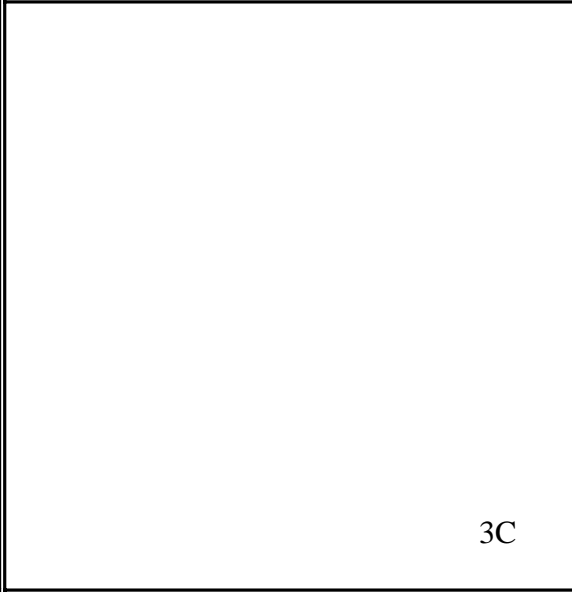
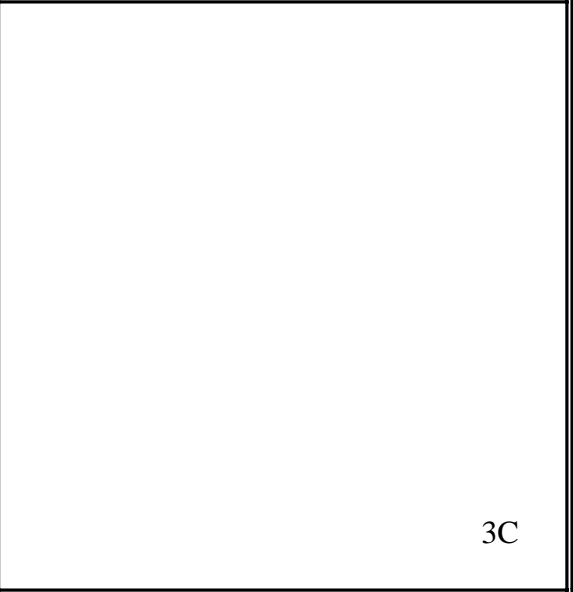
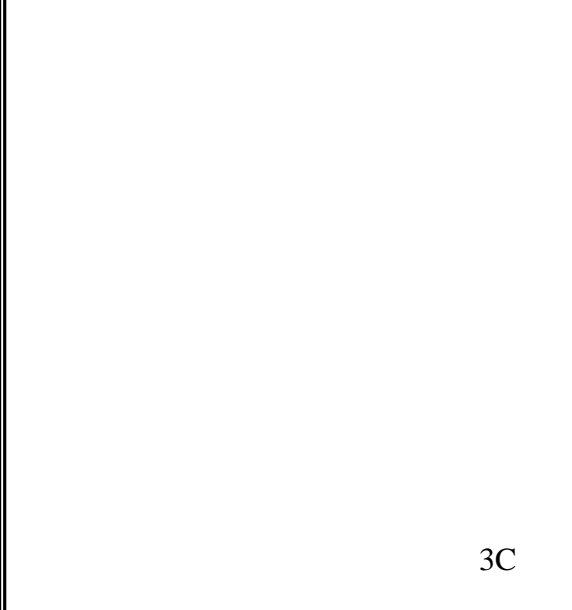
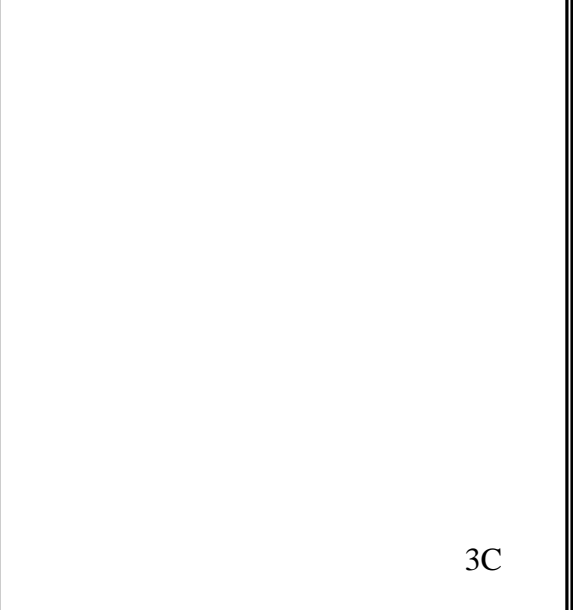
Resource Sheet 5

Task 3: Noodle Necklace Artwork (continued)

<p>Use pasta to make a pattern. All holes must be touching.</p> <p>3B</p>	<p>The elbows do not touch the smooth tubes.</p> <p>3B</p>
<p>The wheels go before the elbows and do not touch the ribbed tubes.</p> <p>3B</p>	<p>Use one of each of these pasta shapes: wheel, smooth tube, ribbed tube, elbow.</p> <p>3B</p>

Resource Sheet 6

Task 3: Noodle Necklace Artwork (continued)

 3C	 3C
 3C	 3C

Resource Sheet 7

Task 6: Writing Prompt - Informative Letter

Now that you are finished planning the carnival, the principal would like to know which pattern you found most intriguing. Write a letter to your principal informing him about one of the patterns you found while helping to organize the carnival.

Before you begin to write, think about:

- * identifying the carnival activity
- * identifying the pattern you discovered
- * explaining the pattern
- * justifying your reasoning using a picture, diagram, or table
- * using appropriate math language

Be sure to check for capitalization, usage, punctuation, and spelling.(CUPS)

Now, begin to write the letter to your principal, informing him of the pattern that interested you. Good luck!

"MATH TALK"

- core - the original part of the pattern that shows repetition
- pattern - organize information and find regularity in the data
- relationship - the comparison of the size, shape, or value, of two or more variables
- sequence - the overall pattern; it is the continuance of the core
- term - each individual unit of the pattern

PROBLEM SOLVING STRATEGIES

- patterns
- use a model
- picture/diagram
- logical deduction
- guess and test
- make a table
- organize a list
- work backwards
- solve a simpler problem
- write an equation

LITERATURE CONNECTIONS

- **If I Ran The Circus, Dr. Seuss**

WRITING ASSESSMENT TOOL

LEVEL	CRITERIA
3 OUTSTANDING	<ul style="list-style-type: none">● Uses specific math language● Explains thinking with evidence● Implements pictures or diagrams● Utilizes a table to organize data● Justifies reasoning
2 GOOD	<ul style="list-style-type: none">● Uses simple math language● Implements pictures or diagrams● Utilizes a table to organize data
1 NEEDS IMPROVEMENT	<ul style="list-style-type: none">● Uses math language● Implements pictures or diagrams
0 NON-SCORABLE RESPONSE	<ul style="list-style-type: none">● Uses writing unrelated to topic● No response